

IN THE CLAIMS

Please cancel claims 10, 18-19 and 25-31 without prejudice. Please amend claims 1-9, 11-17 and 20-24 as provided below. A clean copy of all claims currently pending, including newly added Claims 32-37, are provided below. Please note that the attached Exhibit A provides an edited version of amended claims 1-9, 11-17 and 20-24, with markings to show the changes made.

(Amended) 1. A gas stream vortex mixing system for mixing gas, the gas stream vortex mixing system comprising:

a duct provided with an outer surface defining an interior passageway operable for communicating a gas;

a wing configured to generate a vortex and disposed within the interior passageway of the duct, the wing arced between a leading edge and a trailing edge of the wing; and

a nozzle disposed within the interior passageway of the duct, the nozzle operable to discharge a mixture into the interior passageway of the duct.

(Amended) 2. The gas stream vortex mixing system of claim 1 wherein the nozzle is disposed adjacent the trailing edge of the wing at a point beyond the wing within the vortex generated by the wing.

(Amended) 3. The gas stream vortex mixing system of claim 2 wherein the wing disposed within the interior passageway of the duct is configured to generate lift.

(Amended) 4. The gas stream vortex mixing system of claim 3 wherein the wing is configured to shed the vortex at a point on the trailing edge of the wing.

(Amended) 5. The gas stream vortex mixing system of claim 4 wherein the nozzle is positioned adjacent a first end of the trailing edge of the wing where the vortex is shed.

(Amended) 6. The gas stream vortex mixing system of claim 4 wherein the wing is suspended within the interior passageway of the duct.

(Amended) 7. The gas stream vortex mixing system of claim 4 wherein the duct is provided with an inner surface further defining the interior passageway and wherein the wing is attached to the inner surface of the duct and extends into the interior passageway of the duct.

(Amended) 8. A gas stream vortex mixing system for mixing combustion exhaust gas, the gas stream vortex mixing system comprising:

a duct provided with an outer surface defining an interior passageway operable for communicating a combustion exhaust gas;

a wing configured to generate a vortex positioned in the duct at an angle of from about 5 degrees to about 20 degrees from parallel to the outer surface of the duct in the direction of travel of the combustion exhaust gas through the duct; and

a nozzle disposed adjacent the wing within the interior passageway of the duct, the nozzle operable to discharge a mixture into the vortex generated by the wing.

(Amended) 9. The gas stream vortex mixing system of claim 8 wherein the wing disposed within the interior passageway of the duct is configured to generate lift.

(Amended) 11. The gas stream vortex mixing system of claim 9 wherein the wing is further defined as a cambered wing.

(Amended) 12. The gas stream vortex mixing system of claim 9 wherein the wing is further defined as a substantially arcuate shaped airfoil.

(Amended) 13. The gas stream vortex mixing system of claim 9 wherein the wing is further defined as a cambered wing having a chord line defined as a substantially straight line extending from the leading edge to the trailing edge of the cambered wing and a camber line defined as a substantially arced line extending from the leading edge to the trailing edge of the cambered wing.

(Amended) 14. The gas stream vortex mixing system of claim 13 wherein the wing is constructed of a substantially rigid material.

(Amended) 15. The gas stream vortex mixing system of claim 14 wherein the rigid material is sheet metal.

(Amended) 16. The gas stream vortex mixing system of claim 9 wherein the wing is further defined as an airfoil provided with a camber line defined as a substantially arced line extending from the leading edge to the trailing edge of the airfoil.

(Amended) 17. The gas stream vortex mixing system of claim 16 wherein the airfoil is positioned within the interior passageway of the duct such that a chord line a chord line defined as a substantially straight line extending from the leading edge to the trailing edge of the airfoil is substantially parallel to the outer surface of the duct in the direction of flow of the combustion gas exhaust.

(Amended) 20. The gas stream vortex mixing system of claim 17 wherein the airfoil is operable to shed the vortex at a point on the trailing edge the airfoil.

(Amended) 21. The gas stream vortex mixing system of claim 20 wherein the nozzle is positioned adjacent the point on the trailing edge of the airfoil where the vortex is shed.

(Amended) 22. The gas stream vortex mixing system of claim 17 wherein the nozzle is positioned to discharge the mixture in a direction with the flow of combustion exhaust gas and away from the airfoil.

(Amended) 23. The gas stream vortex mixing system of claim 8 wherein at least one nozzle is positioned adjacent a point on the wing where the vortex is shed.

(Amended) 24. The gas stream vortex mixing system of claim 17 wherein the nozzle is positioned to discharge the mixture in a direction against the flow of combustion exhaust gas and toward the airfoil.

(New) 32. The gas stream vortex mixing system of claim 8, wherein the wing is arced between a leading edge and a trailing edge of the wing along an upper surface of the wing.

(New) 33. The gas stream vortex mixing system of claim 8, wherein the wing is arced between a leading edge

and a trailing edge of the wing along both an upper and a lower surface of the wing.

(New) ~~45~~ 34. The gas stream vortex mixing system of claim 8, wherein the wing is positioned in the duct at an angle of from about 5 degrees to about 15 degrees from parallel to the outer surface of the duct in the direction of travel of the combustion exhaust gas through the duct.

(New) ~~46~~ 35. The gas stream vortex mixing system of claim 8, wherein the wing is positioned in the duct at an angle of from about 8 degrees to about 12 degrees from parallel to the outer surface of the duct in the direction of travel of the combustion exhaust gas through the duct.

(New) ~~47~~ 36. The gas stream vortex mixing system of claim 1, further comprising:

a plurality of wings configured to generate vortices and disposed within the interior passageway of the duct, each of the plurality of wings arced between a leading edge and a trailing edge of each of the plurality of wings.

(New) ~~48~~ 37. The gas stream vortex mixing system of claim 8, further comprising:

a plurality of wings configured to generate vortices positioned in a spaced apart relationship in the duct at an angle of from about 5 degrees to about 20 degrees from parallel to the outer surface of the duct in the

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direction of travel of the combustion exhaust gas through
the duct.
